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THE GREAT BANYAN TREE

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ABSTRACT

The Great Banyan Tree at the Indian Botanic Garden, Howrah is a source of attraction to all visitors. In this paper its history, importance, growth, mythology, protection and training of prop roots have been discussed. Some colour photos have been given to depict its various details.

INTRODUCTION

The Great Banyan Tree or the *'Bishal Vata-Brikshya'* as is locally known is located at the south east end of the Indian Botanic Garden at the terminal points of Banyan, Roxburgh and Kurz Avenues. This tree is the most outstanding feature of interest and the greatest attraction of the Garden which draws a large number of visitors from within the country and abroad. It is also one of the largest trees in the world and an object of wonder and admiration. in the Guinness (1985) Book of World Records edited by Norris Mc Whirter the tree has been referred to as the most massive tree where the tree canopy covers the greatest area. To the visitors it appears more like a miniature forest than a single tree. Lord Vlaentia on visiting the Garden in 1803 made the following observations in his travel account :

> "The finest object in the Garden is a noble specimen of the *Ficus bengalensis* on the branches of which are nourished a variety of specimens of parasitical plants and ferns."

Sir J.D. Hooker (1891) described the condition of the Banyan Tree in 1850 under Falconer's stewardship as follows :

> ......"The great Banyan tree (*Ficus indica*) is still the pride and ornament of the garden. Dr. Falconer has ascertained satisfactorily that it is only seventyfive years old ...... The tree is now eighty feet high and throws an area of 300 ft. in diameter into a dark, cool shade. The gigantic limbs spread out about ten feet above the ground and from neglect during Dr. Wallich's absence, there were on Dr. Falconer's arrival no more than eightynine descending roots or props. There are now several hundreds and the growth of this grand mass of vegetation is proportionately stimulated and increased......"

Mount Stuart (1876), an Under Secretary of State for India who was for nearly a week in Calcutta from January 28th to February 4th, 1875 mentioned in his book, Notes on an Indian Journey, the following :

"On the 3rd, I spent the forenoon at the Botanical Gardens with the Curator, Dr. King. They are the first which I have seen out of Europe, ... the cyclones have done frightful mischief here, but many fine trees still remain. Amongst the best are some grand mahoganies, *Pterocarpus indicus*, a giant from Burmah, a Banyan tree, which was not alive when Plassey was fought, but which has now a girth of eighteen yards and shades a space of eight hundred feet in circumference. On it grow many other plants well known in our hot houses at home, of the genera *Hoya, Pothos, Cereus* etc. ......"

Caine (1898) in his guide lines for European Travellers highly appreciated the tree with such comments as :

> "The great glory of the gardens,
> however, is the superb banyan tree,
> one of the finest in the world.
> It is only 100 years old yet its trunk
> is more than fifty feet in
> circumference, and nearly 200 air
> roots have descended to the earth
> beneath from its mighty branches.
> Its outside measurement is more than
> 800 feet in circumference.
> A large board fastened against the main
> trunk gives much useful and
> interesting information about
> this giant tree"

Menninger (1967) described the tree as :

> "In the Calcutta Botanic Garden
> is a banyan tree so enormous and
> with so many trunks that it takes
> ten minutes to walk around it"

Of recent the comments of Wang Ping-nam, Leader of the Chinese GoodWill Delegation who visited the Garden on March 22, 1978 need special emphasis

> "The Garden is like a paradise on earth
> with innumerable flowers blooming.
> We are particularly impressed
> by the giant banyan tree which has
> multiplied into over thousand trees.
> This is really a miracle which has
> broadened our knowledge"

The ceremony of the historic transfer of Indian Botanic Garden from Government of West Bengal to the Government of India under the direct control of Botanical Survey of India on January 1, 1963 took place under the green canopy of the Great Banyan Tree.

Origin :

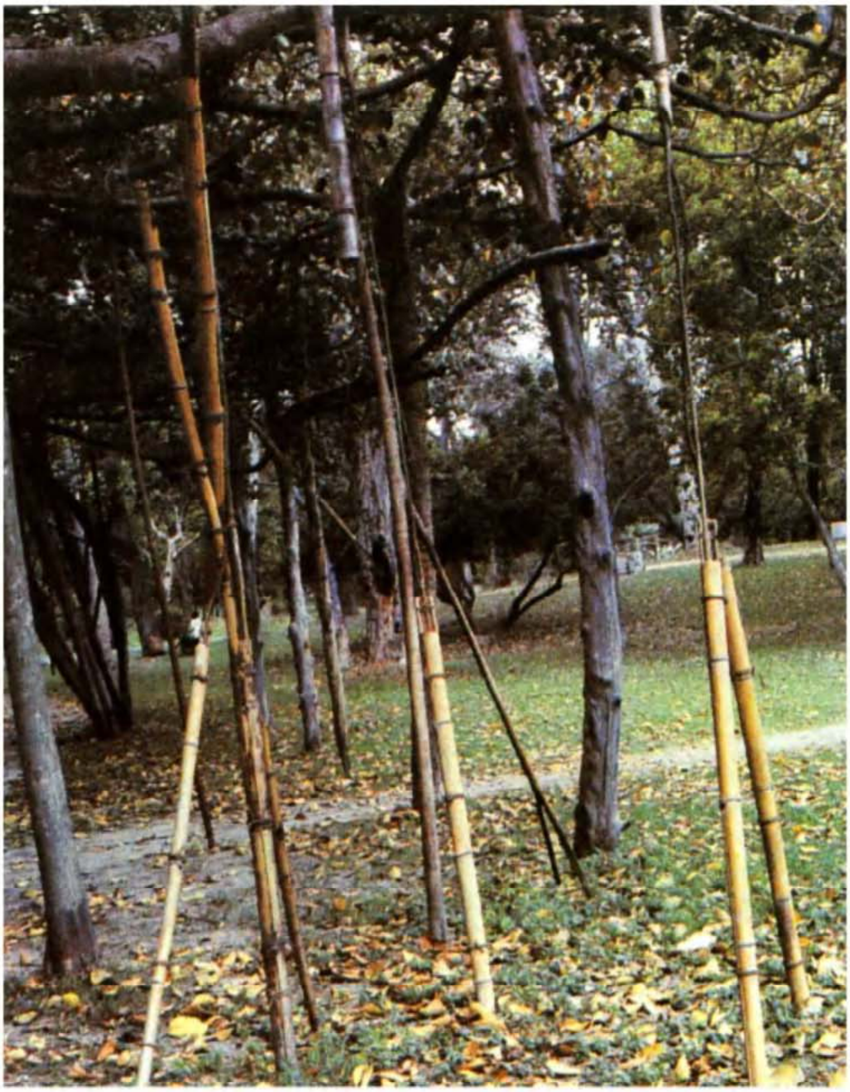
According to the sources which Hooker received in 1850, when he visited the Garden the tree was growing in 1782 on a *Khejur* (date palm) beneath which a *Fakir* used to sit (Hooker, 1891). Benthall (1946) records that "the great banyan in the Royal Botanic Garden of Calcutta, one of the largest banyans in the world is known to have originated .... in this way (by dropping of seeds) from a date palm, *Phoenix dactylifera* L. in the year 1782" Thus from these records it is clear that the tree germinated from a seed on a date palm tree and it was in existence before the establishment of the Garden in 1787 by Colonel Robert Kyd.

Botanical specifications :

Botanically the Banyan tree is named *Ficus bengalensis* L. belonging to the family Moraceae. The generic name *Ficus* is the ancient latin name for the fig, a member of this particular group of plants and the species *bengalensis* refers to the place of its origin, Bengal in India. The English name of 'Banyan' has an interesting origin from the term 'Bania' (Banya) assigned to a section of Indian traders. The saying is that Indian merchants during coarse of their trading in Middle East chose to gather under certain *Vat* trees for business negotiations. This prompted the Europeans of that region to refer the particular trees as banyan trees which spread out gradually. Other regional names assigned to the trees are *Vata* or *Bahupada* (Sanskrit), *Bar* or *Bargad* (Hindi) and *Bot* (Bengali) etc. The tree is indigenous to the foot hills of the Himalayas and west of India but commonly planted all over the country. During the reign of Emperor Ashoka, this species got adequate prominence as an avenue tree

The Great Banyan Tree from a distance. It gives exactly the appearance of a miniature forest.

An internal view of the Great Banyan Tree with innumerable props in various directions.



The bamboo caging of the prop roots for unobstructed growth and proper training.

General A. S. Vaidya, PVSM, MVC (Bar.), AVSM, ADC, Chief of the Army Staff of the Indian Union visiting the Great Banyan in wonder and admiration on 23rd December, 1985 (a few days before his retirement) and roadside plantations were encouraged enormously.

Banyan tree and mythology:

Since ancient time the tree has been a symbol of strength, fertility and immortality in India. Due to its immortal habit by the curious way it expands through aerial roots, it was very often referred to as *'Akshaya-Vat'* in old literatures. In Bengal it is believed to be the symbol of Brahma; in Karnataka, the abode of Lord Rama; in Maharashtra, Gujarat and North India it is worshipped by women for belief of long life of their husbands; in Kerala it is known as the 'Tree of destiny' for persons of Magha-Nakshtra. There is a saying that one who cuts down a *Vat* tree may not have a son in future. Members of some religious sectors are also hesitant in using this tree as firewood. "Its sacred character seems to be due to the shade, shelter and food that it gives to number of insects, birds and other animals thereby meritoriously supporting many animate creatures. The dry twigs are used for producing sacred fires and the leaves as sacred platters and several religious ceremonies are connected with the tree" (Benthall, 1946).

Utility:

The tree is commonly grown as a roadside tree for its massive size and its ability to provide shade and shelter to pedestrians against sun and rains. Raised platforms around many trees serve as a meeting place or a place of worship for inhabitants of a particular locality. Leaves are lopped for fodder. The wood though not of much timber value is durable under water. The wood of aerial roots is used for tent poles, cart yokes, paper pulp etc. and the bark for rope making. Ripe fruits are eaten by poor people in times of scarcity. Normally they are food for birds and monkeys but known to be poisonous for horses. The tree itself serves as a host of lac insects. An inferior type of rubber is obtained from the latex.

The species has also a number of medicinal properties. Charaka prescribed the fruits alone or dried or powdered to form smoking mixture or its decoction in excessive urination, fever, toxicosis etc. (Ray and Gupta, 1965). The milky juice serves as a tonic and often applied externally for pains and bruises. It is also used for toothache. Leaves when heated and made into a poultice serve as a remedy for abscesses. The bark is used for dysentery, diarrhoea and diabetes. Vomiting can be restricted if young tips of hanging roots are used. Most of the parts of the plant are used in various forms for relieving physical ailments amongst the tribal populations in India.

Growth and development of a banyan tree:

The tree slowly attains a massive size of 15-30 m or even more with spreading and almost horizontal branches bearing ovate to elliptic coriaceous leaves. Prop roots, also called aerial roots are developed from the branches which under favourable conditions strike the soil, get fixed up in the earth, become stronger and thicker and develop gradually to serve finally as supporting pillars or subsidiary trunks and when fully established they perform all the physiological functions of a trunk. Thus if a prop or adventitious root with some foliar branches is excised from the rest of the tree, it can grow freely and will establish into an independent tree. The prop roots strike indefinitely from branches and if proper protection is given they get suitable anchorage in the soil and nourishments at a number of points. In nature most of the young prop roots are either destroyed in desiccation or damaged due to the attack of insects and pests.

The tree usually has its origin from seeds dropped by birds on dilapidated buildings and walls or in the notches or crevices of other trees or in the natural receptacles formed by the bases of the leaves of arboraceous monocotyledons. As a result a banyan tree may often be seen growing 'epiphytically' on a palm, which it will strangle in due course and compete as an independent tree (Benthall, 1946).

During its period of growth after seed germination when such seeds are dropped by birds on roofs and walls of buildings it does much damage to the structure. The destruction is accelerated under such situation by some religious beliefs against cutting the tree. Besides raising from seeds the plant can also be multiplied through cuttings, air layerings, grafting etc. vegetatively.

The species bears flowers enclosed in small hypanthodia developing from axils of leaves in early spring which on maturity develops into ripe figs of deep red or scarlet red colour showing an attractive look. In Calcutta some of the trees flower almost throughout the year (Chakraverty and Jain, 1984). New leaves appear in February-March or sometimes in September-October. Ripe fruits come up in April to June and sometimes also in December.

Transformation of a banyan tree to the 'Great Banyan Tree':

The enormous and massive magnitude that a banyan tree can attain when taken care of for its proper protection and expansion right from its early stage with regular care and attention over centuries is reflected in the banyan tree of the Indian Botanic Garden, known as the 'Great Banyan Tree' It is considered great because of its age, compact habit, massive dimension, enviable spread in area and canopy circumference, number of processed aerial roots touching the ground resembling rusted artificial supports of steel and finally bearing an overall look of a forest and not an individual tree— the kind of which is uncommon in the entire South East Asia and probably without any parallel in world records.

Considering the importance of the tree and the position it holds in the National arena, it continues to receive the care and attention to the quantum it deserves and demands. A committee consisting of a Chairman and four members under direct supervision of Deputy Director (Indian Botanic Garden) looks after its cultural and other requirements suggesting measures to be taken up for better upkeep of the tree. Among the operations which are of routine type and continue throughout the year, the following deserve mentioning :

Training of prop roots : Protruding hanging props and branches are trained by caging, adequately nurtured and taken to various directions. More stress is given during monsoon (July to September) when prop roots are brought down at a faster rate. Reconnections of disconnected portions are tried simultaneously. The process of bringing down the newly emerged aerial roots from top of branches till fixation in the ground involves in caging the hanging roots with 1.5 to 2 m bamboo pieces, preferably those of green *Dendrocalamus giganteus* Munro due to its maximum hollow inner spaces. The bamboo pieces are then split into two halves, the nodal obstructions are removed and tied with coir string encircling the newly initiated roots. The inner hollow cavity is filled with sterilised leaf mould to facilitate unobstructed growth of roots while these are hanging from the branches, to maintain the growing surface moisten and also to quicken its stability as it reaches the soil. Moreover such procedure helps to prevent twisting and bending of roots which come on straight and follow the desired direction. Simultaneously worn out caging of older props are either repaired or replaced.

Strengthening of props and branches : Branches spreading horizontally overhead need to be supported artificially at frequent intervals with Sal poles, bamboos and other suitable pieces of logs. These supports provide strength to the moving branches and accelerate their free movement without any chance of breakage particularly during hailstorms or cyclonic weather conditions. Sometimes it appears essential to contact expertise from other Government agencies to provide special supports at certain points which are too high to be covered with such artificial supports. On occasions it is required to invite the Chief Engineer and other CPWD expertise to suggest precautionary measures by providing additional supports to tall or decayed branches.

Pruning : In order to prevent further decay, cutting and pruning of dead and decayed branches and props upto live portions are occasionally undertaken providing necessary supports of wooden pillars beforehand at points where necessary.

Treatment of exposed surfaces : After pruning or wounds created by natural calamities, the exposed surfaces are immediately sprayed with insecticides and fungicides and afterwards, painted with creosote oil. This prevents further decay of non affected parts due to such infection. A paste made of Blitox and linseed oil is found to be a good substitute of creosote oil.

Spray of insecticides and fungicides : Operations undertaken in this regard as both preventive and remedial measures are discussed separately. Contacts are made with the department of Agriculture, West Bengal who are having an organised Plant Protection Unit for arranging a bimonthly foliar spray with powerful mist sprayer so that complete foliar washing of the canopy upto a height of about 25 metre can be attained along with insecticidal spray and nutrient feeding in the form of urea (0.5%). Such spray will also result in a bright look of the foliage being free from dust particles apart from a disease free growth and development.

Treatment of prop bases : Undergrowths encircling prop bases are cleaned and the bases are painted with a layer of creosote oil, a protective wood-coat manufactured by M/s. Shalimar Paints. These prevent the bases of roots from soil borne infections and termites.

Irrigation : The tree demands to be irrigated at intervals particularly during dry seasons. This is also effective for maintenance of the green grass, to prevent hard crust on the soil surface and also to ensure a gentle environment around.

Maintenance of green base : Attempts are made for restoration of carpets of doob grass (*Cynodon dactylon* Pers.) in the patches by a mixed process of turfing and seeding.

Weed control : Frequently the ground area is invaded with a number of undesirable weeds. Such undergrowths are cleaned at regular intervals for maintaining a neat ground area.

Manuring : Normally no manure or fertiliser is applied in the tree bases. The huge leaf fall from the tree itself serve initially as a soil mulch and later on gradual decomposition serves as organic manures.

Other protective measures : In addition to the measures undertaken as above, a number of additional protective measures have also been taken in the recent past for rejuvenation and protection which include :

Addition of soil: The level of the banyan ground was raised with fertile soil in 1980 to protect the surface roots and to facilitate better growth and development of the tree. About 60,000 cft. of soil was added to raise the level of about 15 cm.

Protection by iron fence : In 1980-81 a strong iron fence nearly 1.5 m high was made around the tree covering a circumference of about 329 m along inner side of the 4 m wide metal roads encircling the tree. The props protrude upto a length of about 2 m from roads. The iron railings completely prevent public entry inside the tree arena. Prior to this a large number of inconsiderate admirers considerably damaged the tree in spite of vigilance by putting their autographs on the branches as well as sweet memories of their visit.

Periodic growth and expansion of the tree:

In 1900 Major David Prain, the then Superintendent of the Royal Botanic Garden (presently Indian Botanic Garden) reported that the main stem was 15 m girth encircled with 464 aerial roots upto a girth of about 3.5 m with a crown circumference of 377 m. In 1986 as per the latest record the tree has 1825 aerial roots fixed at ground, 420 m canopy circumference and a highest point of 24.5 m. In 1937-38, the branches could be extended across the road encircling the tree as an overhead canopy. An observation of the data tabulated reveals the course of growth and expansion of the tree.

In spite of absence of the Central trunk, the tree spreads outwards from the centre to the periphery continuously.

Records of natural calamities and their impact on the tree

The location of the Garden by the side of the river Hooghly covering a vast area of 110 hectares is very much prone to natural calamities. It is evident from the records that such periodic natural outbursts inside the Garden for nearly 200 years have left certain indelible impression on the Garden as a whole and the Great Banyan Tree was also the victim along with many other trees. The impact of such natural calamities on the tree may be revealed from a brief extracts of the following reports.

"Dr. Wallich drew up a very full report on the effects of the gale of 3rd June, 1842. It appears from the report that storm did great damage to the Garden...... The cyclone of 5th October, 1864.... struck the Garden with a force unbroken...... The greater number of species of *Ficus* have also escaped. The perfect aerial roots of many of these species enable these trees to resist the most violent storm" (A report by Mr. T. Anderson, Superintendent, Royal Botanic Garden, Calcutta, 1865, Biswas, 1942).

"A severe storm visited the Garden on 26th November, 1901 and did much

Sl. No.	Year	Number of props	Canopy Circumference	Highest point	Remarks
1.	1850	89	240 m	20.5 m	—
2.	1900	464	377 m	—	Girth of main stem, 15 m
3.	1938	666	338 m	—	—
4.	1946	1044	426 m	27 m	
5.	1962	1000	408 m	30 m	
6.	1965	1044	420 m	—	
7.	1968	1050	420 m	30.5 m	Reduction is due to damage caused by natural calamities in 1969 and 1978
8.	1973	1.125	No record	—	
9.	1980	1380	"	—	
10.	1981	1573	402 m	26.4 m	
11.	1984	1775	412 m	24.0 m	
12.	1986	1825	420 m	24.5 m	Area = 14000 sqm (3 46 acres)

(Table showing period growth and expansion of the tree) damage by uprooting a number of valuable trees and greatly disfiguring many that were not completely destroyed" (Annual Report, Royal Botanic Garden, 1901-1902.)

"The close of the year was marked by a severe wind-storm (March 9th, 1904) which overturned a number of trees...... A large portion of central section of Great Banyan Tree fell spontaneously at midnight on March 16th, 1904. The tree had not apparently been damaged by the storm of the previous week and there was no wind at the time of the accident, which it is to be feared, indicates merely the progress of natural decay" (Annual Report, Royal Botanic Garden, 1903-1904).

"Early in the year a violent hailstorm broke..... the severity of which is not often experienced in Bengal. It damaged several trees and glass houses in the nursery" (Annual Report; Royal Botanic Garden, 1912-1913).

"Sibpur Gardens suffered much material damage as a result of cyclone passed over the Calcutta district on 21st September, 1916. Nearly 400 trees and shrubs uprooted" (Annual Report, Royal Botanic Garden, 1916-1917).

"In May there came a cyclone which only lasted for five minutes but succeeded in laying low some five hundred trees" (Annual Report, Royal Botanic Garden, 1926-1927).

"The cyclonic nor'wester storm was severe enough during the year to cause an irreparable damage to the Garden by blowing down several old trees" (Annual Report, Royal Botanic Garden, 1940-1941).

In the year 1971, the river Hooghly overflowed during high tide and the Garden was under water upto waist height. "Some aerial roots were damaged which were immediately attended...... some termite and fungal infestation was noticed with the trunks which were immediately sprayed with insecticides" (Annual Report, Botanical Survey of India, 1971-1972).

"The Indian Botanic Garden, Howrah, was flooded in October, 1978. Major part of the Garden remained submerged for 3 days from 4th to 6th October, the water level rising upto 1.5 m in places" (Deb, 1980). This inflicted severe damage to the plants, roads and boundary walls. Though no immediate effect was noted in Great Banyan Tree but the damage was caused during June, 1979 when four props 10 to 20 cm diameter along with two big branches fell down as a result of storm. In May, 1981 one dead prop root was broken and fell down due to nor'wester. These successive damages created a vaccum inside the Banyan circle.

On 6th July, 1982 a branch on the western side fell down suddenly disjointed from a point completely rotten and decayed due to fungal infection of borer infested trunks. On examination the causal organism was identified as *Fomes pachyphloeus* (Pat.) Bres.

"On 7.4.84 night a shower accompanied with gusty winds with a speed of about 60 km per hour swept over the Garden and adjacent localities and caused considerable damage to the Great Banyan tree.... An uprooted prop of 15 m length was reinstated" (Annual Report, Indian Botanic Garden, 1984-1985).

A severe wind and hailstorm which swept over the Garden on 17th April, 1986 also caused damage to an infected prop.

Damage by infection and care taken of:

Besides onslaught by vagaries of nature, the tree during its existence of nearly 230 years suffered considerably due to attack of pests, diseases and other harmful agencies like vultures. It is considered worthwhile to record an account of damages caused by such infestations.

Report of 1924-25 reveals that after cyclones of 1864 and 1867 the tree had an attack of a hard fungus (*Fomes pachyphloeus* Pat.) due to exposed broken branches. "It soon became evident that nothing would save the central column and that the only method of prolonging the life of the radial parts was to operate. At the time of writing the central portion was completely removed and the decaying branches were severed at points ahead of the disease." (Annual Report, Royal Botanic Garden, 1924-25).

"Diseased portions of some of the branches had to be removed and every precautions were taken to save the affected branches from further deterioration. The earthwork all over the banyan circle and the raised cement platform all round proved to be a safeguard for the banyan circle and earthwork improved the general condition of the famous tree— the pride of the Garden. The pucca seats round some of the thicker aerial roots served not only as a protection to the roots but also provided comfortable seats for rest for many visitors" (Annual Report, Indian Botanic Garden, 1951-1952).

From the report of 1952-53 it is seen that "special care was taken to protect the expanding branches and for stimulating and taking down new aerial roots. Diseased and dried portions of some branches were removed. Further provisions were made for allowing the visitors to sit under the tree"

During 1953-54, "Dead and dying and diseased branches and epiphytes were removed and treated with chemicals in order to prevent other branches from the attack of fungi and insects" (Annual Report, Indian Botanic Garden, 1953-1954).

On several occasions in the recent past experts in the field of Entomology and Mycology from Indian Council of Agricultural Research, New Delhi, Forest Research Institute and Colleges, Dehra Dun, Department of Agriculture, West Bengal and Zoological Survey of India visited the Garden on request to study the extent of damage and suggest remedial measures and the tree was properly treated in the light of such suggestions advocated. The infestations recorded and the remedial measures taken during the last twenty five years are grouped into following heads:

Lac insect : A typical lac insect of the genus *Kerria*, possibly *Kerria lacoa* Kerr. took the tree as a host in the middle of 1960 along with other trees of the Garden and again in 1983. Mechanical control such as cutting and burning of the infected twigs and chemical control by spraying Monocil @ 2 ml per litre of water with a detergent Teepol Ag. @ 1 litre in 10 litres of water at fortnightly intervals were undertaken as preventive and remedial measures.

Stemborer : Most of the older trunks are infested with it. Remedial measures practised are plugging holes with cotton wads soaked in chloroform or petrol and sealed with mud poultice and also by undertaking light trap mechanism.

Leaf eating caterpillar : It is of frequent occurrence, almost in every season causing extensive damage to leaves. This seasonal infestation is very often recorded in other banyan trees growing in Calcutta-Howrah. Applications of Sumithion @ 200 ml. per 200 litre of water and Mitacid 50% (Methyl Parathion) @ 8 ml per gallon of water have been found useful.

Termites : This is controlled by soil application of 5% Aldrin dust or a spray of Termex.

Fungal infection Among the fungoid infections, the decay caused by *Fomes pachyphyloeus* (Pat.) Bres. is considered to be serious. The fungus enters the host normally through wounds. As a preventive measure, the exposed surfaces of trunks are smeared with creosote oil. The infection is controlled with treatment of either of the following : Dithane M 45 (0.2%) or Captan (1 kg in 450 litres of water).

Vultures : Frequency of invasion has been on the rise. Attempts are made to control by various acceptable measures.

In absence of regular Plant Protection Squad in the Garden, the control due to infestation are made as per advice received from :

1. Director, Zoological Survey of India.
2. Director, Department of Agriculture, West Bengal.
3. Head, Pathology Department, FRI, Dehra Dun.
4. Entomologist and Mycologist, IARI, New Delhi.
5. Department of Botany (Pathology Section), Calcutta University.
6. Department of Microbiology, Bose Institute, Calcutta.

Conclusion :

A critical study of the tree from all aspects reveals that during its glorious existence in the site for more than 200 years, it faced several natural hazards most of which it could overcome and to some it yielded. The century old internal decay of the older trunks due to attack of a number of fungal and pest infestations accelerated some of the damages due to natural calamities. But due to its perfect anchorage and gaining continuous care and attention throughout its existence, it still survives and expands in all directions. Its alround expansion requires that the road should be re-routed and the Banyan Gate— an entry and exit point near the tree, permanently closed. A proposal is on the move that "the new road around the tree should be at least 100 m away from the present periphery of the tree so as to allow sufficient space for its future expansion.... The older parts at the centre of the tree are now decaying perhaps because of the old age and/or some unknown disease which produces tubercles on the bark of the older portions. The younger portions have a normal and healthy look" (Report of the Sub-Committee of Indian Botanic Garden, 1979).

As the tree has been surviving without its main trunk, it was thought necessary to indicate its position. Accordingly in 1981 a small pillar like structure was erected at the point inside the banyan circle. This was renovated and reconstructed in 1986 with a black triangular marble slab over a white circular marble. The monument bears writings in three languages— English, Hindi and Bengali on the three sides of the triangle. The writing depicts the following

MAIN TRUNK
EXISTED HERE AND
WAS REMOVED
IN 1925 DUE TO
FUNGAL ATTACK.
IT ATTAINED A GIRTH
OF 16.5 METRES AT
1.7 METRES HEIGHT

Apart from this for public information, a new display board with summary information, about the tree and a Garden map was fixed up at the entry point facing Banyan Avenue in 1986. These are in addition to the already existing boards near the Banyan Gate also written in three scripts. Three cemented display boards at three vantage points of the tree are under construction.

In spite of the vigorous efforts done for rejuvenation and further expansion of the tree, these are likely to be affected by certain factors which are beyond control of the Garden authorities. An observation in this regard from the report of the Sub-Committee on Indian Botanic Garden, 1979 will be worthwhile to conclude :

"The Garden, when originally laid nearly 200 years ago, was far away from habitation and was unaffected by industrial establishments which have increased human interference beyond measure"

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